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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ANYIKIRE, CHIKAODILI E

ART UNIT	PAPER NUMBER
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,424	Applicant(s) HEKSTRA ET AL.	
	Examiner Chikaodili E. Anyikire	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application is responsive to application number (10501424) filed on July 13, 2004. Claims 1-14 are pending and have been examined.

Specification

2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.

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- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Drawings

4. The drawings are because all diagrammatic blocks and features in Figures .. are required to be distinctly labeled to indicate contents or function with legends to 37 CFR 1.83(a), 1.84(o).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Mancuso et al (US 6,240,211).

As per claim 1, Mancuso et al disclose a motion estimation unit for estimating a current motion vector for a group of pixels of an image, comprising:

generating means for generating a set of candidate motion vectors for the group of pixels, with the candidate motion vectors being extracted from a set of previously estimated motion vectors (Col 5 Ln 17-29);

a match error unit for calculating match errors of respective candidate motion vectors (Col 5 Ln 31-57); and

a selector for selecting the current motion vector from the candidate motion vectors by means of comparing the match errors of the respective candidate motion vectors, characterized in that the motion estimation unit is arranged to add a further candidate motion vector to the set of candidate motion vectors by calculating this motion vector on basis of a first motion vector and a second motion vector, both belonging to the set of previously estimated motion vectors (Col 5 Ln 7-55).

As per claim 2, Mancuso et al disclose a motion estimation unit as claimed in claim 1, characterized in that the selector is arranged to select, from the set of candidate motion vectors, a particular motion vector as the current motion vector, if the corresponding match error is the smallest of the match errors (Col 8 Ln 24-33).

As per claim 3, Mancuso et al disclose a motion estimation unit as claimed in claim 1, characterized in that the match error unit is designed to calculate a first one of the match errors by means of subtracting luminance values of pixels of blocks of pixels of respective images of a first image pair (Col 5 Ln 31-51).

As per claim 11, Mancuso et al disclose a motion estimation unit as claimed in claim 1, characterized in being arranged to calculate the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion

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vector and the second motion vector belonging to a particular motion vector field (Col 5 Ln 17-55 and Col 7 Ln 66 – Col 8 Ln 32).

Regarding claim 12, arguments analogous to those presented for claim 1 are applicable for claim 12.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 4-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancuso et al (US 6,240,211) in view of Odaka et al (US 5,647,049).

As per claim 4, Mancuso et al disclose a motion estimation unit as claimed in claim 1, characterized in being arranged to calculate the further candidate motion vector (Col 5 Ln 17-37).

However, Mancuso et al does not explicitly teach first motion vector and the second motion vector, with the first motion vector belonging to a first forward motion vector field and the second motion vector belonging to a second forward motion vector field, with the first forward motion vector field and the second forward motion vector field being different.

In the same field of endeavor, Odaka et al teach first motion vector (Fig 26, Rf1) and the second motion vector (Fig 26, Rf2), with the first motion vector (Fig 26, Rf1) belonging to a first forward motion vector field and the second motion vector (Fig 26, R2) belonging to a second forward motion vector field, with the first forward motion vector field and the second forward motion vector field being different (Col 19 Ln 39-Col 20 Ln 21).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the invention of Mancuso et al with the invention of Odaka et al. Inter-frame predication is a well-known concept and increases coding efficiency.

As per claim 5, Okada et al disclose a motion estimation unit as claimed in claim 4, characterized in being arranged to calculate the further candidate motion vector by means of subtraction of the second motion vector from the first motion vector (Col 19 Ln 64-Col 20 Ln 21).

As per claim 6, Okada et al disclose a motion estimation unit as claimed in claim 4, characterized in being arranged to calculate the further candidate motion vector by

means of subtraction of the first motion vector from the second motion vector (Col 19 Ln 64-Col 20 Ln 21).

As per claim 7, Mancuso et al disclose a motion estimation unit as claimed in claim 1, characterized in being arranged to calculate the further candidate motion vector. (Mancuso, Col 5 Ln 17-37).

However, Mancuso et al does not explicitly teach the first motion vector and the second motion vector, with the second motion vector belonging to the second forward motion vector field and the first motion vector belonging to a third forward motion vector field, with the second forward motion vector field and the third forward motion vector field being different.

In the same field of endeavor, Odaka et al teach the first motion vector (Fig 26, Rf1) and the second motion vector (Fig 26, Rf2), with the second motion vector (Fig 26, Rf2) belonging to the second forward motion vector field and the first motion vector (Fig 26, Rf1) belonging to a third forward motion vector field, with the second forward motion vector field and the third forward motion vector field being different (Col 19 Ln 39-Col 20 Ln 21).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the invention of Mancuso et al with the invention of Odaka et al. Inter-frame predication is a well-known concept and increases coding efficiency.

As per claim 8, Okada et al disclose a motion estimation unit as claimed in claim 7, characterized in being arranged to calculate the further candidate motion vector by

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means of multiplication of the second motion vector with a predetermined constant and subtraction of the first motion vector (Col 19 Ln 24-Col 20 Ln 21).

As per claim 9, Mancuso et al disclose a motion estimation unit as claimed in claim 1, characterized in being arranged to calculate the further candidate motion vector (Col 5 Ln 17-37).

However, Mancuso et al does not teach the first motion vector and the second motion vector, with the first motion vector belonging to a fourth forward motion vector field and the second motion vector belonging to a first backward motion vector field.

In the same field of endeavor, Odaka et al teach the first motion vector (Fig 26, Rf1) and the second motion vector (Fig 26, Rf2), with the first motion vector (Fig 26, Rf1) belonging to a fourth forward motion vector field and the second motion vector (Fig 26, Rf2) belonging to a first backward motion vector field (Col 19 Ln 39-Col 20 Ln 21).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the invention of Mancuso et al with the invention of Odaka et al. Inter-frame predication is a well-known concept and increases coding efficiency.

As per claim 10, Okada et al disclose a motion estimation unit as claimed in claim 9, characterized in being arranged to calculate the further candidate motion vector by means of multiplication of the first motion vector with a predetermined constant and summation of the second motion vector (Col 19 Ln 24-Col 20 Ln 21).

As per claim 13, Mancuso et al disclose the device and method for motion estimation and compensation are utilized to encode movie/video materials (Col 11 Ln 45-62).

However, Mancuso et al does not explicitly teach the components of an encoder.

Encoder components are well known in image compression as taught by Okada et al.

Odaka et al teach an encoder comprising, a discrete cosine transformer, a quantizer, a run-level encoder and a motion estimation unit for estimating a current motion vector for a group of pixels of an image (Odaka et al, Fig 9, 300; Col 11 Ln 16-58).

It would have been obvious for one having skill in the art to have modify the invention of Mancuso with the invention of Okada et al. In accordance with the teachings of Okada et al because it will identify the well-known components of an encoder.

As per claim 14, Mancuso et al disclose the device and method for motion estimation and compensation are utilized to encode movie/video materials (Col 11 Ln 45-62).

However, Mancuso et al does not explicitly teach receiving means for receiving a signal representing images.

In the same field of endeavor, Odaka et al disclose an image processing apparatus comprising:

receiving means for receiving a signal representing images (Odaka et al, Fig 9, 001 and 100; Col 11 Ln 16-58).

It would have been obvious for one having skill in the art to have modify the invention of Mancuso with the invention of Okada et al. In accordance with the teachings of Okada et al because it will identify the well-known components of an image apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chikaodili E. Anyikire whose telephone number is (571) 270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272 - 7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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